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Typology of Projectile Points/Knives from Upper East Tennessee

By

Zoen M. McLachlan

An Undergraduate Thesis Submitted in Partial Fulfillment
of the Requirements for the
Midway Honors Scholars Program
East Tennessee State University

Zoen M. McLachlan 3 May 2021
Zoen M. McLachlan Date

Chris Widga 5/3/21
Dr. Chris Widga, Thesis Mentor Date

Reagan L Cornett 5/3/2021
Reagan Cornett, Reader Date

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Abstract

Projectile points/ knives (PPKs) are categorized by morphology, also called typology, and associated with cultural periods. A total of 64 PPKs in collections in the Archaeology Lab at East Tennessee State University were curated as untyped and without provenience. They were allegedly collected from ground surveys in Upper East Tennessee, but without archaeological context research had not been prioritized. The importance of such research lies in the fact that few publications exist on the region of Upper East Tennessee and many reference books on lithic typology portray PPKs through illustrations of the ideal morphology of each type. The challenge herein is that the lithic technologies excavated by archaeologists are typically used, worn, broken, or abandoned. A comparative collection of projectile points found in the field from the region of Upper East Tennessee is a valuable research resource. The 64 PPKs yielded 25 typologies that are, indeed, published from Upper East Tennessee and show variability from resharpening, wear, and other means. The comparative collection is curated at the East Tennessee State University Archaeology Lab at Valley Brook.

Typology of Projectile Points/Knives from Upper East Tennessee

Typology categorizes projectile points/knives (PPKs) by similar morphological characters. Though PPK types are not typically culturally associated, they can offer several important clues that help to reconstruct prehistories. Their mere presence in a location shows that people were once there, the typologies can often be placed into a relative timeframe, the raw materials can indicate whether they were made locally or brought in from elsewhere, and they can show the evolution of lithic technology over time. No substantial research has been published on lithic typologies of the Upper East Tennessee Region, nor has there been significant focus on locally important shape variants within regional typologies. Sixty-four untyped PPKs curated at the East Tennessee State University (ETSU) Archaeology Lab are identified by point type, cultural period, and lithic raw material. These points are the first comparative lithic collection for the Archaeology Lab at ETSU. The creation of a comparative collection of PPKs aids in the construction of regional cultural chronologies in the Ridge and Valley and Cumberland Plateau physiographic regions of Upper East Tennessee and shows regional typological variability that is important to regional patterns in prehistoric lithic technology.

Context and Background

Some of the previously untyped PPKs in curation at the ETSU Archaeology Lab at Valley Brook were donated to Dr. Jay Franklin of ETSU, reportedly from general ground surveys in the Upper East Tennessee regions labeled as ETSU study areas in figure 1 (Franklin). Because they were found on the surface, they have no provenience. This means their locations were not recorded, they were not associated with other artifacts, nor were they associated with an archaeological site. This presents a challenge to their usefulness and may be one reason they remained unsorted and untyped. If they are locally made and can be placed into regional

typologies, they can certainly be useful to future archaeological research in Upper East Tennessee.

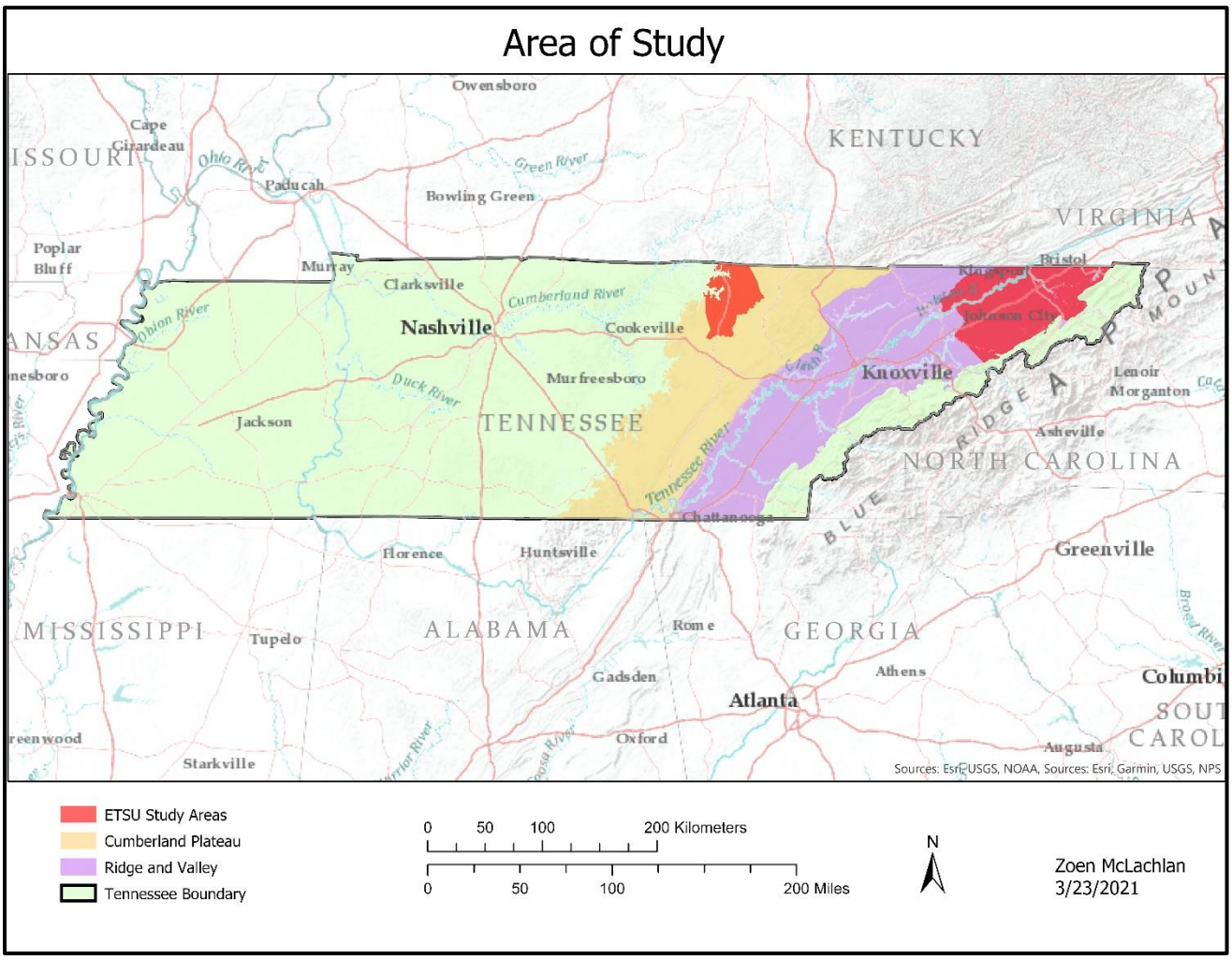

Figure 1: Map showing areas of archaeological work performed by ETSU from 2006 to present, representing probable origins of typed PPKs. GIS data sources: ESRI, US Census, Ecoregions of Tennessee.

PPK typologies have been defined at archaeological sites across the southeastern United States and placed into four main prehistoric cultural periods: Paleoindian (prior to 8000 BCE), Archaic (8000-1000 BCE), Woodland (1000 BCE to 1000 CE), and Mississippian (1000-1500 CE) (Anderson and Sassaman 7, 15; Anderson and Mainfort 1). Southeastern typologies have

been defined by professional archaeologists; however, lithic typology and dates of occupation vary regionally.

When approaching PPK typological analysis, three perspectives help to inform the constraints on lithic technology employed by a cultural group: the limitation of available lithic materials, the behavior of the tool user, and finally that of the questioner as archaeologist (Odell 11). Additionally, to place each point within a typology, the definitions assigned to regional typologies must be investigated and each untyped point must be quantitatively and qualitatively analyzed for comparison. Identifying the raw materials present and whether they are consistent with previously discovered points in Upper East Tennessee addresses the first perspective. The second perspective approaches questions of the morphological features of each point type and its placement within a cultural period. Distinguishing typologically important morphological features and consideration of raw material type is critical to understanding typological placement and geographic distribution of each PPK. The cultural period is determined by the typology and speaks of the people who manufactured them. In some cases, it is possible to track movement and/or trade to answer behavioral questions. Signs of breakage, resharpening, and significant wear in most of the PPKs examined thus far points to the resourcefulness of past peoples. The third perspective is addressed through typing each point and confirming if each is consistent with known PPKs from Upper East Tennessee.

Preliminary analysis showed significant variation among some typologies present in the ETSU collection, which was hypothesized could serve as examples of acceptable morphological differences within the represented PPK types. The variations and examples of points found in the archaeological record differ from the reference material available for lithic analysis, which are

depicted as unused projectile points. In reality, projectile points recovered from archaeological sites are commonly broken, worn, or abandoned mid-production.

The most appealing factor in this research is that little work on lithics has been done in Upper East Tennessee. Since they survive quite well in the archaeological record, stone tools and PPKs are an important piece of the history of Indigenous Americans in this region. They can help archaeologists piece together local histories that are neglected by traditional historical documentation, including under-represented groups. The deliverable from this research will aid future researchers in regional-scale analyses of lithic technology with realistic examples of wear and variation. Furthermore, this research also contributes to the Department of Sociology and Anthropology as an important resource for faculty and students to study regional lithics and prehistoric cultures in East Tennessee. As a prospective archaeologist, a contribution to future research adds a sense of purpose to this project.

Raw Material

The most commonly reported raw materials for lithics in Upper East Tennessee are quartzite and chert; less commonly, rhyolite, quartz, and chalcedony are reported. Quartzite is an easily recognizable sandstone consisting of small grains of quartz cemented together with other minerals (Johnson et al., chap.6). It is a metamorphosed sandstone and can have conchoidal or splintered fractures, depending upon the degree of metamorphosis (Harwood 89). Though quartz is primarily clear to white, quartzite can range in colors from white to reddish brown due to its many impurities (Harwood 89), the range of which can be seen the lithic collection at ETSU (refer to figure 3).

Quartzite is the primary material used in the manufacture of Appalachian Stemmed points from the southern Appalachian region (Kneberg 66; Cambron and Hulse 6; Justice 163). Material

type shows regionality in this case and can also help differentiate morphologically similar PPKs. An example is that Archaic Morrow Mountain II points and Woodland Ebenezer points can sometimes be distinguished by whether rhyolite or chert was used as a raw material, respectively (Dean; Coe 37). Ebenezers are typically made of chert, while Morrow Mountain II are typically made of rhyolite or quartz and, rarely, chert (Dean).

Identifying point typologies includes the investigation of raw materials, morphology, size range, cultural period, and regional distribution. These data will be placed into a larger context through comparison to typologies described in the scientific literature. PPKs are first sorted into groups based on basal morphology: stemmed, stemless, or notched (Dean 1). These groups are further distinguished by descriptive features, such as blade shape and/or stem and base shape (Dean 1). Finally, many types exhibit additional unique characters to the edges, notches in bases, serration or blades, and others (see supplemental documentation) (Dean 1). Once sorted, morphological features such as cross-section shape, shoulder shape, blade shape, blade edge angle, distal end type, hafting area or stem/base features are described using nomenclature from Cambron and Hulse (5–7). Linear measurements (figure 2) are then taken with digital calipers, rounding to the nearest whole millimeter, including: Maximum length (ML), blade length (BL), shoulder width (SW), maximum thickness (MT), neck width (NW), basal width (BW), stem length (SL), and depth of basal concavity (DL), if present (Justice 240). All measurements for each typology are contained in table 1 at the end of the paper. The gathered data sets are compared to known regional typologies, described, photographed, and given a catalogue number. The catalogue number consists of the prefix ETSULC- (East Tennessee State University Lithic Collection) followed by a typology abbreviation of 2-4 letters, and finally, a number. Each

typology begins numbering at 1. The points are prepared for curation in the Archaeology lab at ETSU as a final step in the creation of the comparative lithic collection.

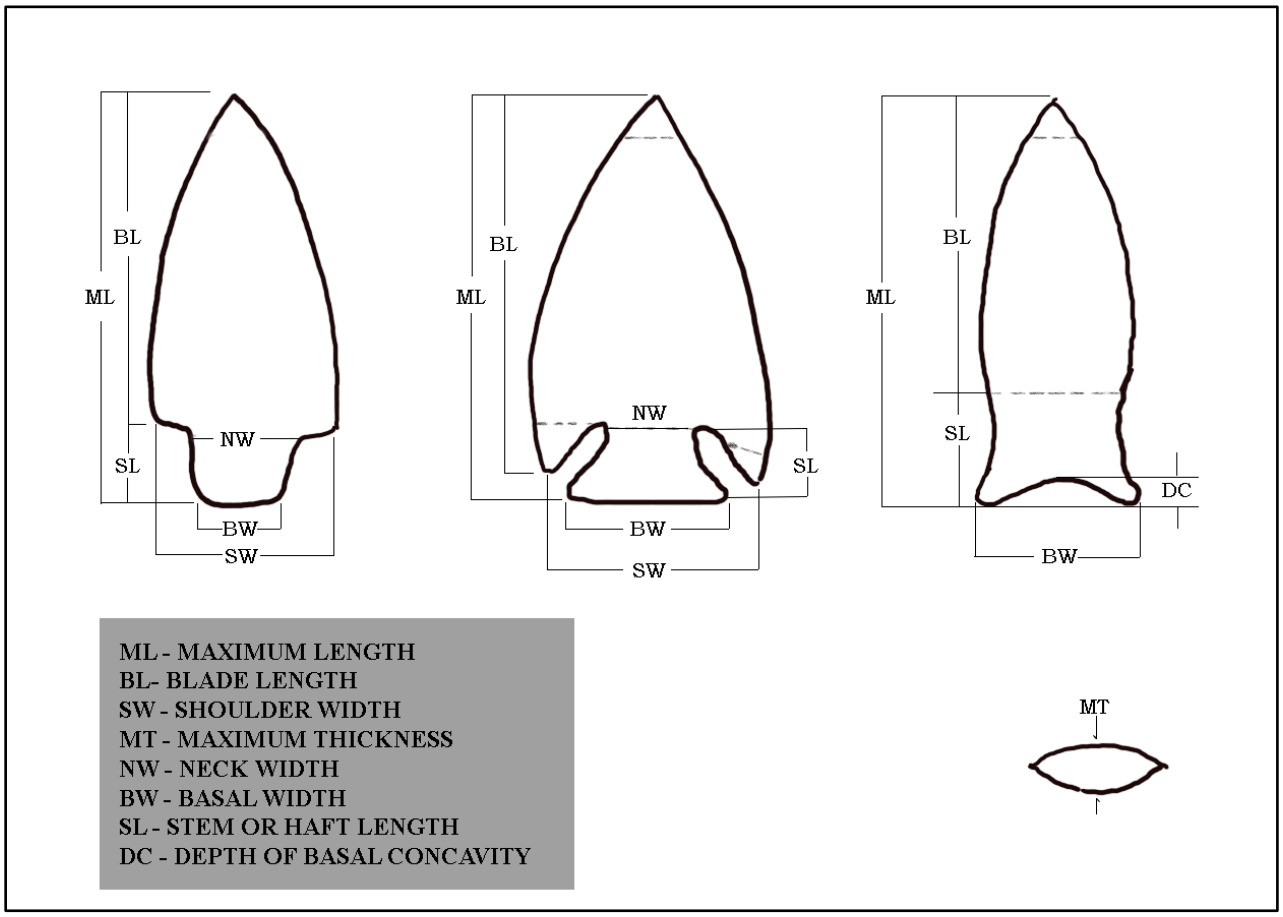

Figure 2: Linear PPK measurements (adapted from Justice 240)

Appalachian Stemmed

Part of the Savannah River Cluster in North Carolina, the Appalachian Stemmed typology is considered a morphological correlate of the Savannah River Stemmed in Tennessee (Cambron and Hulse 6; Coe 45; Dean; Justice 163–67). The Tennessee typology was named by Dr. Madeline Kneberg in 1957 from several examples found at the Camp Creek Site in the Appalachian Region of Upper East Tennessee (Cambron and Hulse 6; Kneberg 66). The distribution is common in the Southeast United States, especially in the Appalachian region (Cambron and Hulse 6; Kneberg 66). Savanna River Cluster points are seen as far north as New

York, as far south as Florida, and in Eastern parts of Alabama, Tennessee, Ohio, Pennsylvania, and east toward the coastal United States (Justice 164). The typology is associated with the middle to late Archaic and early Woodland cultural periods and are typically made of quartzite (Cambron and Hulse 6), though examples are known to be made from chert and igneous rocks, such as rhyolite (Justice 163). The typology is defined by a trianguloid blade with excurvate to straight side edges, a straight to slightly tapered stem that is broad and has an incurvate base (Kneberg 66). A more recent analysis of Appalachian Stemmed points from Upper East Tennessee finds that most were made of quartzite, and around 28% of them had been resharpened (Boyd 108). Resharpening reduces the overall size and can subtly reshape some features. The acceptable maximum length has been set between 60-100 mm (Cambron and Hulse 6; Harwood 89), though more recent analysis from Upper East Tennessee seems to account for resharpening, setting the maximum length found in the field to 46-112 mm (Boyd 108).

All ten examples of the Appalachian Stemmed (AS) typology (figure 3) in the ETSU collection at Valley Brook were given a unique typology code and number sequence 1-10 to follow the aforementioned prefix of ETSULC-. Henceforth, each will be referred to by its unique identifier and number, such as AS1. All are made from quartzite, with the exception of AS8, which is made of rhyolite. All ten examples align with Appalachian Stemmed morphology, raw materials, and maximum length. All feature tapered shoulders, either contracting or straight stem edges, excurvate to straight blade shapes, and flattened cross-section, with the exception of AS4. Finally, with the exception of AS3 and AS10, the other eight have incurvate bases. Any unique features or type deviations are outlined for each point and linear measurements are displayed in table 1.

Figure 3: Appalachian Stemmed Points. Top, left to right, ETSULC-AS 1-5. Bottom, left to right, ETSULC-AS 6-10

AS1 features a uniquely recurvate blade shape on both edges. It is unclear whether this was due to wear or intentionally shaped. The distal end is acute and off center. Upon closer inspection, the opposite face of the distal end shows a breakage, indicating the pointed tip pictured is not the original distal end. This is a rather large projectile point, indicating it was either broken during manufacture or soon thereafter, having no sign of resharpening. Flaking is rather deep and random, offering a crude appearance on each face. The blade of AS2 is broad and excurvate, though there appear to be a notch on either blade edge about half-way between the distal end and shoulder. AS3 is the only example without an incurvate base. It is straight and appears to have been either intentionally left unfinished or broken in a straight line. Toward the smaller end of the accepted size range, it is possible this was resharpened. AS4 has one shoulder more prominent than the other. The distal end shows wear from regular use. AS5 shows evidence

of retouching around all edges by flaking scars around the perimeter. AS6 is one of the few complete Appalachian Stemmed points and is representative of its official definition. AS7 is nearly complete, except for the broken distal end. AS8 is the only rhyolite point in the Appalachian Stemmed collection. Its severely worn distal end makes it difficult to determine the original shape of the blade edges with certainty, though they may have been excurvate. AS9 may have been reworked along one edge, due to pressure flaking marks and a reduced shoulder. It is difficult to tell the shape of the blade edges on AS10, but it seems they may have been either straight or slightly excurvate. The basal edge is broken. Though their appearances are slightly different, the morphology, raw material, and size range clearly places these points within the Appalachian Stemmed typology.

Bakers Creek

The Bakers Creek (BC) typology has a Woodland cultural association (Cambron and Hulse 8). James Cambron originally described it as a Stemmed Copena point, as it is commonly found with Copena points in surface collections (Cambron and Hulse, 8). Justice places it within the Lowe Cluster (212). Dejarnette et al. determined a common distribution along the Tennessee River Valley in both Tennessee and Alabama (qtd. in Justice 212), represented primarily in the Early to Middle Woodland Period (Cambron and Hulse 8). Bakers Creek is described as a medium-sized (43-78 mm), trianguloid point with an expanding stem and straight to excurvate blade edges (Cambron and Hulse, 8; Justice 212). The typical cross-section is bi-convex, the shoulders should be horizontal or tapered but narrow, and the distal end sharply acute (Cambron and Hulse, 8). The basal edge is often thinned and either straight or slightly excurvate, and notch placement is typically one third of the way from the basal edge (Cambron and Hulse 8).

BC1 (figure 4) is a chert point with a broken stem and distal end. Despite the breakage, it is possible to place this within Bakers Creek typology due to the clearly expanding stem, the narrow and tapered shoulders, the bi-convex cross-section, and the placement of the shoulder at around one-third of the maximum length.

Figure 4: ETSULC-BC1, Bakers Creek

Dallas Excurvate

The Dallas Excurvate (DE) typology was named by Dr. Madeline Kneberg and T.M.N Lewis in 1946 for its association with the Dallas Culture along the Tennessee River during the Mississippian Period (qtd. in Cambron and Hulse 62). It is known as Guntersville in Alabama and named by James Cambron (62). It is a stemless, medium (33-50 mm), lanceolate point with a straight basal edge and excurvate blade edges (Cambron and Hulse 62). It can be flattened or bi-convex in cross-section (Cambron and Hulse 62). DE1 (figure 5), made from chert, is broken about two-thirds of the way up, depriving the PPK of its distal end. Still, it has clearly been placed into the correct typology. The point is lanceolate in form with a bi-convex cross-section, a clearly-excurvate blade, and a relatively straight basal edge.

Figure 5: ETSULC-DE1, Dallas Excurvate

Decatur

Decatur points (DR) are small to medium-sized corner notched points with beveled blade edges and an incurvate base (Cambron and Hulse 41). The shoulders can be tapered or horizontal with expanding barbs, or horizontal without barbs (Cambron and Hulse 41). Blade shape is most commonly either straight or incurvate and the blade is beveled on one edge with serration and an acute distal end (Cambron and Hulse 6). Maximum length can be between 29-54 mm (Cambron and Hulse 41). Changes in this type from resharpening results in a shorter blade, rather than blade shape variation (Justice 71, 81). Decatur typology is associated with the early Archaic (Cambron and Hulse 41) and is found in the Southeast and Midwest, many examples recovered are from the Tennessee Valley in Alabama and Tennessee (Justice 81).

DR1 (figure 6) is a chert point on which the distal end, barb, and basal side edges are broken, though it is still possible to diagnose morphological features that are consistent with Decatur. The serrated blade is beveled toward the edges, one barb is visible expanding from the shoulder, and it is likely to have been an incurvate blade, as seen from the side with the barb

intact. Though the base is broken on either side, an incurvate basal edge can be assumed from the curvature on the base. The maximum length of the point is on the low end of the accepted range, even in the broken state.

Figure 6: ETSULC-DR1, Decatur

Ebenezer

The Ebenezer typology (EB) originates in Upper East Tennessee (Lewis and Kneberg 17) but may extend into northern Alabama along the Tennessee Valley (Ebenezer). Initially described as Rudimentary Stemmed points at the Camp Creek site in Tennessee (Lewis and Kneberg 17), the typology was subsequently named Ebenezer by Dr. Kneberg (Cambron and Hulse 42). These small points are associated with the Late Woodland Period in Upper East Tennessee (Cambron and Hulse 42). Morphological characteristics are described as small with a short, rounded stem, excurvate blade edges, and a bi-convex cross-section, with no defined size criteria (Cambron and Hulse 42). The overall shape is very similar to Morrow Mountain Rounded Base and Morrow Mountain II, though Coe defines both Morrow Mountain types as

medium to large points, indicating size as a differentiating factor between these types and the small Ebenezer type (qtd. in Cambron and Hulse 89; Justice 104-107).

EB 1-7 (figure 7) are all made from chert and under 35 mm in maximum length, which aligns with other small point lengths. All, except EB5 have a bi-convex cross-section. Blades are excurvate, except EB2 and EB7, which both have straight blades. All stems are rounded, some slightly longer than others, and some more crudely shaped than others. The stem on EB1 is skinnier at the neck than is typical and the blade edges are straight, but the important features such as overall shape, rounded base and size are consistent with the typology. EB2 aligns well with all criteria for the typology. The notable difference is in the horizontal shoulders. Most feature tapered shoulders, but this is not listed as a defining feature. EB3 is similar to Morrow Mountain II but due to the small size and lack of context, it likely falls within the Ebenezer typology (Dean). EB4 is well aligned within the typology. EB5 has one main deviation from the typology: the cross-section is plano-convex with a median ridge on the convex face. For this reason, its affiliation with the Ebenezer type was questioned, yet it seems to primarily fit the typology in all other aspects. EB6 is morphologically similar to Morrow Mountain Rounded Base, though the size makes it most consistent with Ebenezer (Dean). Finally, EB7 is typical of the typology except for straight blade edges. This is not a very accurate feature for defining points that have been reworked or worn. There is evidence of retouch along the blade edges of this point.

Figure 7: Left to right: ETSULC-EB 1-3 on top, EB 4-7 below, Ebenezer

Flint River Spike

The Flint River Spike typology is a Late Woodland Point defined as a small to medium (39-58 mm), narrow, lanceolate point with a bi-convex or median ridged cross-section, and an acute distal end (Cambron and Hulse 53). The blade can be excurvate or straight and the base can be either rounded or unfinished and straight (Cambron and Hulse 53). There is a hafting area that extends to the widest part of the blade and is typically thinned (Cambron and Hulse 53). The full range of distribution is unknown, but has been definitively found in the Tennessee River Valley and northwest Georgia (Cambron and Hulse 53).

FRS1 (figure 8) is a complete example of the Flint River Spike type (Cambron and Hulse 53). It is a lanceolate shape, median ridged with an acute distal end, and a rounded base that is thinned.

Figure 8: ETSULC-FRS1, Flint River Spike

Greeneville

The Greeneville (GV) typology was described as a common point type at the Camp Creek Site in Tennessee (Lewis and Kneberg 19). The stemless, trianguloid type has a maximum length between 38-64 mm (Lewis and Kneberg 19), though Cambron and Hulse list the length as 29-40mm (59). It is defined as a Woodland point with parallel to excurvate hafting edges, a bi-convex cross-section, and blade edges that are straight or excurvate (Cambron and Hulse 59). The distribution is on the western side of the Appalachian Mountains from Greeneville, Tennessee to southern Alabama, scattered throughout the Tennessee Valley (Cambron and Hulse 59). Justice lists Greeneville as a morphological correlate of the Copena Triangular (208).

GV1 (figure 9) is likely a Greeneville preform that was abandoned in production (Dean). Though it is unfinished, the alignment with the Greeneville typology is present. It is a stemless, trianguloid shape with a bi-convex cross-section, the blade is excurvate, and the hafting area has straight side edges. The distal end is close to acute but is off-center.

Figure 9: ETSULC-GV1, Consistent with Greeneville Preform

Halifax Side Notched

Halifax (HSN) typology was named and originally defined in an unpublished thesis by Coe in 1964 (qtd. in Cambron and Hulse 63). The size range for the maximum length is from 29-56 mm and is typically made from quartz and less commonly from quartzite (Coe; qtd. in Cambron and Hulse 63). Halifax is a side notched point with a bi-convex cross-section, tapered shoulders, acute distal end, a straight or excurvate blade, and an expanded stem (Cambron and Hulse 63). The cultural period is vaguely referenced as middle Archaic period and the distribution is similarly vague and uncertain (Cambron and Hulse 63). Distributions from the Roanoke River Valley in North Carolina (Cambron and Hulse 63) and Virginia, as well as into the Tennessee Valley in both Tennessee and Alabama ("Halifax").

HSN1 (figure 10) is a side-notched point made from quartz with a bi-convex cross-section, tapered shoulders, and expanded stem. The distal end is broken, but there is enough blade to determine that it would be excurvate with a distal end. Its size places it just inside of

acceptable range for the typology. These characters all align with the typology, despite the missing distal end.

Figure 10: ETSULC-HSN1, Halifax Side Notched

Jacks Reef Corner Notched

Jacks Reef Corner Notched (JRCN) points are medium, corner notched points that are very thin and flattened in cross-section and have an excurvate to parallel-angular blade (Cambron and Hulse 68; Ritchie 26). The shoulders typically have thin barbs, the distal end is narrow to acute, and the base can be straight or slightly incurvate (Cambron and Hulse 68). These points are easily identified by their thin cross-section in relation to their overall size. The distribution is quite wide, ranging from the Northeast to the Great Lakes, Ohio, Indiana, Kentucky, much of Tennessee, and northern Alabama (Cambron and Hulse 68; Justice 219). In New York, they are associated with Middle to Late Woodland (Cambron and Hulse 68; Ritchie 26). In Tennessee, they are associated with the Woodland Period and are sometimes referred to as Corner Notched Woodland (Cambron and Hulse 68).

JRCN1 and JRCN2 (figure 11) are both extremely thin with flattened cross-sections, both are corner notched, and both have basal edges that are straight and thinned. JRCN1 has a broad distal end with evidence of fine reworking around the blade edges. One shoulder is broken as is the expanded base on the same side, but the shoulder that is present shows a slight barb and expanded base. Though JRCN2 is quite damaged, the corner notch is clearly seen, one thin barb is present from one shoulder, and the cross-section thickness, which is the clearest indicator of the typology. The base may have been slightly incurvate. In this instance, the most likely typology for both is Jacks Reef Corner Notched.

Figure 11: ETSULC-JRCN 1-2, Jacks Reef Corner Notched

Jacks Reef Pentagonal

General Description: Jacks Reef Pentagonal (JRP) typology is simply described as a small to medium stemless, pentagonal point (Cambron and Hulse 69; Ritchie 28) and is in its own cluster called Unnotched Pentagonal Cluster (Justice 215). The blade edges and hafting area edges are both straight and the hafting area may be slightly contracting, the cross-section is very thin and flattened, and the basal edge is straight or slightly incurvate (Cambron and Hulse 69;

Justice 215; Ritchie 28). The distribution is quite wide, ranging from the Northeast, the Great Lakes, Ohio, Indiana, and into the Southeast as far as northern Alabama (Justice 215; Ritchie 28). The Southeastern distribution is not well researched, but examples have been found in Upper East Tennessee dating to the Late Woodland Period (Dean; Justice 215).

JRP1 and JRP2 (figure 12) are both clearly pentagonal in shape with all features of the typology present. The corner edges of the base of JRP1 are either broken or worn and this example is slightly longer than JRP2. This morphology is well represented in illustrations, as it is a relatively simple shape.

Figure 12: ETSULC-JRP 1-2, Jacks Reef Pentagonal

Kanawha Stemmed

The Kanawha Stemmed (KS) typology was defined by Broyles as a small, Archaic point with a bifurcated or notched base, triangular blade with straight or incurvate edges, projections from the shoulders, and thinning scars on both sides of the base (qtd. in Justice 95). The blades of this type are often resharpened to have serrated edges (Justice 95). There are no listed

measurement guidelines. The distribution is very similar to the Kirk Corner Notched typology, extending slightly more westward (Justice 96).

KS1 (figure 13) is most consistent with the Kanawha Stemmed typology in having incurvate blade edges that show secondarily serrated edges, extended shoulders, and thinning scars present on the intact portion of the base. Because the base is broken, it is impossible to determine whether the base is bifurcated or notched; however, the rest of the morphology of this point align well with the Kanawha Stemmed typology.

Figure 13: ETSULC-KS1, Kanawha Stemmed

Kirk Corner Notched

Kirk Corner Notched (KCN) belong to a cluster of the same name and are corner notched points with a flattened to bi-convex cross-section, barbed shoulders are common, blades can be a variety of shapes and are often serrated, the distal end is acute, and the basal edge is either incurvate or horizontal (Cambron and Hulse 73; Coe 69-70; Justice 71). The basal edge is ground and thinned on Alabama Kirk Corner Notched points, but no grinding is found in North Carolina (Cambron and Hulse 73). This typology is associated with the Early Archaic (Cambron and

Hulse 73). Resharpening of this type does not typically change the blade shape, rather, it shortens its length (Justice 71). The distribution spans nearly the entire East Coast, out to the Great Lakes, and southwest into eastern Texas (Justice 77).

KCN1 (figure 14) is consistent with an extremely worn Kirk Corner Notched point (Dean). The barbs are not present, though they may have been broken or worn from use, resharpening, or weathering. The distal end is acute, the blade is straight with signs of serrated edges, the stem is corner notched, and the basal edge is incurvate. KCN2 has a broken distal end, broken barbs, and one side of the base is also broken. Despite this, it is possible to determine that the stem is corner notched, the blade has evidence of serration on straight edges, and it likely had an incurvate base. Both examples have bi-convex cross-sections. They both are most consistent with the Kirk Corner Notched typology.

Figure 14: ETSULC-KCN 1-2, Kirk Corner Notched

Ledbetter

Kneberg states that the most distinctive character of the Ledbetter (LB) typology is the asymmetrical recurvature of the blade edges, which is reversed on each side (qtd. in Cambron and Hulse 78; Justice 149). Also portraying asymmetry are the shoulders, one of which appears

larger than the other (Cambron and Hulse 78; Justice 149). This also gives the illusion that the stem is off-center, but the distal end is typically centered over the stem. Ledbetter points are large with a thick, bi-convex cross-section, with maximum lengths ranging from 76-178 mm and thickness ranging from 13-19 mm, as defined by Kneberg (qtd. in Cambron and Hulse 78). Sources vary on the stem morphology. Justice lists a contracting stem (149), while Cambron and Hulse list a straight to expanding stem (78). Ledbetter typology has a Late Archaic association and is distributed widely as far as Indiana, western North Carolina, northern Florida, eastern Louisiana and states in between (Justice 150).

All Ledbetter examples (figure 15) have asymmetry in the shoulders and blades, where present. The bases range in shape, and cross-sections are all bi-convex. Reversed blade recurvature is seen on points 2, 3, and 4. The blade of LB1 is missing a significant portion of its blade, but the asymmetrical shoulders are present, the stem is straight, and there is a suggestion of recurvature on the portion of blade edge that remains. LB2 has a broken distal end, but all other features of the Ledbetter typology are distinguishable. The stem on this example is slightly expanding. LB3 is severely worn on the distal end, the stem is relatively straight, though a small portion of one edge of the base is broken. LB4 also has a broken distal end and a broken basal edge corner, but the asymmetry clearly places this point as well as the other within the Ledbetter typology.

Figure 15: ETSULC-LB 1-4, Ledbetter

Levanna

Levanna (LV) points are categorized as part of the Late Woodland/Mississippian Triangular Cluster (Justice 228). The typology is distinctive as a thin, stemless, triangular point with an incurvate base (Ritchie 31). The triangular shape can form an equilateral or isosceles triangle, though an incurvate base is most commonly found on the former (Justice 228; Ritchie 31). Blade edges are often straight, but examples with slightly incurvate or excurvate edges are sometimes found (Justice 228). The size range is typically 22-76 mm in length (Ritchie 31). Levanna points are found throughout New England, the Great Lakes region, and as far south as the very tip of Upper East Tennessee, associated with the Late Woodland Period (Justice 228). This type may extend into the Southeast and may overlap with, or perhaps be a morphological correlate for, the Yadkin type in the Carolina Piedmont (Coe 49; Justice 228). LV1 (figure 16) matches the type description of the equilateral triangle with an incurvate base, straight blade edges, and a thin cross-section.

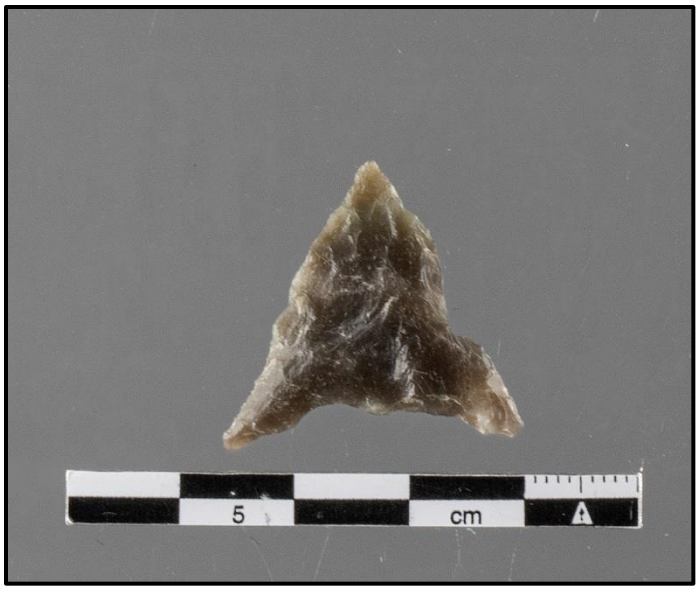

Figure 16: ETSULC-LV1, Levanna

Little Bear Creek

Dejarnette et al. describe the Little Bear Creek type as medium to large with slightly excurvate blade edges, and a long stem (qtd. in Justice 196). The cross-section is typically bi-convex, the shoulders tapered or horizontal, contracting stem that is ground, and a straight to excurvate basal edge that is sometimes unfinished (Cambron and Hulse 82). The maximum length is between 64-90 mm (Cambron and Hulse 82). Justice places Little Bear Creek typology in the Dickson Cluster and lists the area surrounding the Tennessee River Valley as the geographical range (196-197). Little Bear Creek points are associated with the Late Archaic/Early Woodland Periods (Cambron and Hulse 82; Justice 196).

LBC1 (figure 17) has a weak resemblance to the Ledbetter type, since the shoulders appear slightly asymmetrical. The stem is longer than most of the Ledbetter examples in the collection, and the asymmetry is not as pronounced and could represent the challenges of manufacturing. The longer, contracting stem, the unfinished basal edge, and the bi-convex cross-section all suggest a placement within the Little Bear Creek Typology (Dean).

Figure 17: ETSULC-LBC1, Little Bear Creek

Morrow Mountain II

Morrow Mountain II (MMII) is part of the Morrow Mountain Cluster and is similar to the Morrow Mountain I type (Justice 104-105). Like the Morrow Mountain I, it has a bi-convex cross-section, tapered shoulders, and a contracting stem, but the Morrow Mountain II stem is longer (Justice 105). The blade is long and narrow, unless resharpened, the blade edges are straight to excurvate, the shoulders may flare laterally (Coe 37; Justice 105). The distal end is acute. The maximum length ranges between 30-80 mm (Coe 37). The Morrow Mountain Cluster is confined to the Middle Archaic, the points allegedly going out of production by the time the Savannah River Cluster appears in the archaeological record (Justice 105). The distribution of this cluster extends from the New England coast, extending westward at West Virginia to Kentucky and tapers down through West Tennessee to the Gulf Coast of Florida (Justice 107).

MMII1 (figure 18) certainly aligns with the Morrow Mountain II typology with little to no deviation. The point has a long, narrow blade, tapered shoulders, contracting stem that extends beyond the shoulders, and a bi-convex cross-section.

Figure 18: ETSULC-MMII, Morrow Mountain II

New Market

New Market (NM) projectile points were originally combined with Randolph typology, until it was distinguished as a separate type based on the flaking and cultural association (Cambron and Hulse 96). The Randolph is found primarily in the Carolina Piedmont, whereas New Market points are found throughout the Tennessee Valley (Cambron and Hulse 96). New Market points are medium-sized and some are nearly lanceolate in shape, except for the expanded shoulders and rounded base (Cambron and Hulse 96). The cross-section is bi-convex, the distal end is acute, the blade edges can be straight or slightly excurvate, and the stem edges are normally straight (Cambron and Hulse 96). The maximum length of this Woodland typology is between 45-61 mm (Cambron and Hulse 96).

Of the four New Market examples (figure 19), NM1 is the thickest, though they all have stems that are significantly more robust than the blade. This may be from being resharpened while hafted (Dean). NM1-3 all have expanded shoulders and relatively rounded bases and all four have either straight or slightly excurvate blade edges. The

basal edge of NM4 is not retouched like the others, which could be indicative of some of the plesiotypes that showed no expanded shoulders when bases were not retouched (Cambron and Hulse 96).

Figure 19: ETSULC-NM 1-4, New Market

Nolichucky

Nolichucky (NL) points were prevalent at the Camp Creek Site in Upper East Tennessee and were dated to the Woodland Period (Kneberg 66; Lewis and Kneberg 17). The typology is a small to medium stemless variety with an excurvate blade edge, a bi-convex cross-section, an acute distal end, a hafting area with incurvate side edges, and a basal edge that can be incurvate or straight (Cambron and Hulse 98). The basal edge can be auriculate with rounded or pointed auricles (Cambron and Hulse 98). Justice lists Nolichucky as a morphological correlate of the Copena Cluster points (208). Nolichucky projectile points are found throughout the Tennessee River Valley (Cambron and Hulse 98, “Nolichucky”).

The three Nolichucky examples (figure 20) look quite variable on the surface, but when the individual anatomy is examined, it is possible to place them all within the typology. All three

have a bi-convex cross-section, excurvate blade edges, incurvate hafting area side edges, incurvate basal edges, and auricles. NM1 has rounded, prominent auricles and is crudely manufactured. NM2 is a very small example, but all features are compatible with the typology. NM3 is a larger variety with a broken distal end, yet it is possible to see that the blade is excurvate. The auricles are more pointed and less prominent.

Figure 20: ETSULC-NL 1-3, Nolichucky

Otarre Stemmed

Justice categorizes Otarre Stemmed (OS) as a morphological correlate to the Savannah River Cluster (167). There is some controversy over the typology, as some sources refer to Savannah River Small and Otarre as the same point and others describe them as separate points ("Otarre"). The original description by Keel was unobtainable, but projectilepoints.net describes the type as a stemmed, trianguloid point with a bi-convex cross-section, straight to excurvate blade edges, tapered to horizontal shoulders, a straight stem, and a straight to incurvate basal edge ("Otarre"). This description does seem nearly identical to the Savannah River Stemmed (Justice 164). The maximum length ranges from 29-70 mm ("Otarre"), which is significantly

smaller than the Savannah River/Appalachian Stemmed PPKs (Cambron and Hulse 6). The distribution of this typology is hypothesized as Western North and South Carolina from the Late Archaic to Early Woodland ("Otarre"), but an unpublished thesis on the Middle Nolichucky River Valley found 17 examples of Otarre Stemmed, which conclusively places this type within Upper East Tennessee (McIlhaney 20).

Both examples (figure 21) are representative of the described typology for Otarre Stemmed (Dean). The only notable difference is that OS2 is plano-convex, which is likely not enough to suggest a different typology.

Figure 21: ETSULC-OS 1-2, Otarre Stemmed

Saratoga Broad Bladed

The Saratoga Cluster is comprised of three typologies, two of which are represented in this collection: Saratoga Broad Bladed and Saratoga Parallel Stemmed (Justice 154-157). Winters describes the Saratoga Broad Bladed (SBB) type as a large point with a broad stem that can be straight to expanded, a thick, bi-convex cross-section, and blade shapes from excurvate to straight (qtd. in Justice 154). The longer blades tend to be excurvate, while the shorter blades

tend to have straight blade edges (Justice 154). The shoulders can be horizontal to tapered and are usually rounded (Justice 154). The basal edge is straight and varies from beveled to unfinished (Justice 154). The Saratoga Cluster are found from southern portions of Indiana and Illinois, as far east as East Tennessee, south into northern Alabama, and west into the western edge of Missouri from the Late Archaic to Early Woodland (Justice 158). No measurements are offered for this type.

SBB1 (figure 22) is representative of its typology with rounded shoulders, straight basal edge and stem edges, and slightly excurvate blade edges. The cross-section, however, is plano-convex and the cortex is still on the blade face, which is thick and unfinished. There can be a small amount of cortex on the stems, but the crudely shaped blade and unfinished blade face indicate that there may have been a design flaw recognized by the tool maker. From his experience in creating lithics, Dean states that if a point becomes too thick in cross-section and too thin in blade width, the risk is high and is not worth continuing production. SBB2 is quite thick with a bi-convex cross-section. Some features suggest it might align with the third type in the Saratoga Cluster, which is Saratoga Expanded Stem (Justice 157), but since the stem is broken, it may be a Saratoga Broad Bladed (Dean). The shoulders are tapered, the blade edges are excurvate, and the basal edge is straight. Context would offer more information, but with current information, this point can be placed within the Saratoga Cluster.

Figure 22: ETSULC-SBB 2 and 1, Saratoga Broad Bladed
(pictured in reverse order)

Saratoga Parallel Stemmed

Saratoga Parallel Stemmed (SPS) points are described by Winters as similar to Saratoga Broad Bladed as the longer blades are typically excurvate, while shorter blades are straight edged (qtd. in Justice 157). The straighter blades may be a result of resharpening and the blade edges frequently blend into the shoulder and stem edges (Justice 157). Cross-sections are plano-convex or bi-convex, and the basal edges are unfinished or beveled on both faces (Justice 157). This type has the same distribution and cultural period as the previous type. No measurements are offered.

SPS1 (figure 23) is well situated within the typology of a resharpened Saratoga Parallel Stemmed point. Though the distal end is broken, the blade edges are excurvate, one converging into the shoulder and blending into the stem on one edge. The basal edge is unfinished, and the cross-section is bi-convex.

Figure 23: ETSULC-SPS1, Saratoga Parallel Stemmed

Snapps Bridge

Snapps Bridge (SB) is known as Coosa in Alabama (Dean). These are small or medium short-stemmed points with a thick cross-section and a maximum length ranging from 31-43 mm (Cambron and Hulse 29). The cross-section is bi-convex or plano-convex, shoulders can be horizontal or tapered, the blade is excurvate with finely serrated edges and beveled (Cambron and Hulse 29). The basal edge is sometimes thinned and excurvate and the stem is straight, though it should be noted that the illustrated example has a straight basal edge (Cambron and Hulse 29). Snapps Bridge is a Woodland PPK that is found in the Tennessee River Valley ("Coosa Stemmed"; Dean) and into northern Alabama in the Coosa River area (Cambron and Hulse 29; "Coosa Stemmed").

The three Snapps Bridge examples (figure 24) all have thick, bi-convex cross-sections, and excurvate blade edges that show fine serration and beveling on both sides. They all have relatively straight stem and basal edges. SB2 appears worn with the shoulders blending rapidly

into the stem. This is evidence of resharpening, but still fits within the Snapps Bridge typology (Dean). SB1 and SB2 have no notable deviations from the typology.

Figure 24: ETSULC-SB 1-3, Snapps Bridge

Stanly Stemmed

Stanly Stemmed (STS) belongs to its own cluster (Justice 97) and has a "typical Christmas Tree shape" (Coe 35). Cross-sections can be plano-convex or bi-convex, the stem is straight with a notched basal edge (Cambron and Hulse 118; Coe 37). Shoulders are tapered, horizontal, and/or expanded (Cambron and Hulse 118). Blade shapes vary as recurvate, excurvate or straight and resharpening can sometimes bevel the edges or add serrated edges (Coe 37). The larger examples of Stanly Stemmed points are said to converge with smaller Savannah River (Appalachian Stemmed) points and it is hypothesized that Kirk Corner Notched points may be ancestral to Stanly Stemmed (Coe 37). Lengths range from 40-80 mm and are certainly found in the North Carolina Piedmont (Coe 37) as well as in northern Alabama and southern Tennessee (Cambron and Hulse 118), though projectilepoints.net seems to have extended that range significantly from an unknown source ("Stanly").

Figure 25: ETSULC-STS1, Stanly Stemmed

STS1 (figure 25) is a well-worn example of Stanly Stemmed (Dean). The notched base, straight stem, and bi-convex cross-section fit perfectly into the typology. The distal end is worn or obtuse and the shoulders are worn or eroded away, though tapered shoulders are within the typology. There is evidence of beveling and could indicate a reworked blade.

Swan Lake

Swan Lake (SL) is a small, side-notched point with a thick, bi-convex or median ridged cross-section (Cambron and Hulse 120). The shoulders are narrow and can be tapered or expanded, the basal edge is straight or excurvate, and it is common to find cortex on (the outer surface of rock) on the base (Cambron and Hulse 120). Blade edges are frequently straight, but some examples have incurvate or excurvate blades (Cambron and Hulse 120). Swan Lake points range from 30-41 mm in length and are found in the Tennessee River Valley region (Cambron and Hulse 120). SL1 (figure 26) is a remarkable example of the Swan Lake typology. It is a thickly bi-convex, side-notched point with a straight base that contains cortex. The shoulders are

also narrow and tapered, the blade edges are straight, and one blade face also has a portion of cortex remaining.

Figure 26: ETSULC-SL1, Swan Lake

Sykes

Part of the White Springs Cluster, Sykes (SY) typology is described by Lewis and Lewis as broad projectile points with a short stem formed from a triangular preform from which the lower corners have been removed (qtd. in Justice 108). The blade can be straight or excurvate but changes in blade shape due to resharpening were not reported (Justice 108). The shoulders are narrow and tapered or horizontal and the basal edge is straight and beveled on both faces, but fairly thick at the neck (Justice 108). No measurement guidelines are offered. Sykes points are associated with the Middle to Late Archaic Period and are found mainly in the Tennessee River Valley (Justice 108-110).

Figure 27: ETSULC-SY 1-2, Sykes

Untyped Points

Seven PPKs that did not fit known typologies are present in the collection. They could represent variations that deviate significantly from regional typologies, be specially made points, or could have come from outside of Upper East Tennessee through various means. The photographs are not included in this report, since they are not typical of Upper East Tennessee, but will be added to the collection for future research.

Discussion and Conclusion

While examples of variability within typologies can be found in obscure or out of print archaeology journals, these are not easily attainable if a copy does not exist in a research library. For example, there are several examples of worn and broken points illustrated in the Camp Creek site report in the Tennessee Archaeologist from 1957: a book that is not archived digitally and cannot be ordered online. It would be possible to overlook these sources, instead relying on the illustrations of pristine points in reference books or on non-academic sources. While these are valuable resources, they offer a narrow window into typologies, both regionally and morphologically.

Overall, the collection clearly demonstrates variability within many represented types, but when the individual morphological features are closely examined, it is possible to place each of the points in this collection within their respective typologies or, at the very least, within their respective clusters. All PPKs in this collection have been reported in publications from Upper East Tennessee in regions that support the claim that they were found via ground surveys in regions surveyed by ETSU. As previously stated, qualitative variability is rarely described and more rarely pictured. Quantitative data is inconsistently included in articles and reference books and is not standardized. Current literature on lithics of the Ridge and Valley and Cumberland Plateau physiographic regions of Upper East Tennessee is rare, often existing in unpublished documents. A type PPK collection is a valuable research aid for further study of regional lithic typologies and its curation at the ETSU Archaeology Lab at Valley Brook will be an asset for the department and the university.

Table1: Linear Measurements of all PPKs, in millimeters

Collections Number	Proposed Point Type	Raw Material	ML	BL	SW	MT	NW	BW	SL	DC
ETSULC-AS1	Appalachian Stemmed	quartzite	*105*	80	45	18	29	22	17	1
ETSULC-AS2	Appalachian Stemmed	quartzite	78	62	40	13	27	16	14	1
ETSULC-AS3	Appalachian Stemmed	quartzite	66	58	41	12	25	14	9	*x*
ETSULC-AS4	Appalachian Stemmed	quartzite	56	45	43	14	25	19	10	0.5
ETSULC-AS5	Appalachian Stemmed	quartzite	62	50	35	12	24	22	11	0.5
ETSULC-AS6	Appalachian Stemmed	quartzite	78	66	40	12	28	26	10	0.5
ETSULC-AS7	Appalachian Stemmed	quartzite	*80*	*65*	40	12	25	25	12	0.5
ETSULC-AS8	Appalachian Stemmed	rhyolite	*64*	*41*	34	11	24	14	15	0.5
ETSULC-AS9	Appalachian Stemmed	quartzite	69	57	33	10	24	22	10	0.5
ETSULC-AS10	Appalachian Stemmed	quartzite	*43*	*33*	37	11	22	*19*	13	*x*
ETSULC-BC1	Bakers Creek	chert	*41*	*26*	27	7	19	*15*	19	*x*
ETSULC-DE1	Dallas Excurvate	chert	*35*	*27*	na	9	14	15	9	0.5
ETSULC-DR1	Decatur	chert	*30*	*23*	*25*	6	15	*14*	6	0.5
ETSULC-EB1	Ebenezer	chert	28	20	15	7	7	4	8	na
ETSULC-EB2	Ebenezer	chert	28	22	16	7	7	7	6	na
ETSULC-EB3	Ebenezer	chert	31	23	18	7	10	7	8	na
ETSULC-EB4	Ebenezer	chert	31	25	17	7	9	7	6	na
ETSULC-EB5	Ebenezer	chert	*30*	*20*	18	9	11	6	9	na
ETSULC-EB6	Ebenezer	chert	35	30	21	11	10	8	5	na
ETSULC-EB7	Ebenezer	chert	30	23	21	9	14	7	7	na
ETSULC-FRS1	Flint River Spike	chert	51	36	na	11	17	14	na	na
ETSULC-GV1	Greeneville Preform	chert	38	38	na	9	21	21	na	na
ETSULC-HSN1	Halifax Side Notched	quartz	*30*	*25*	19	10	14	17	5	0.5
ETSULC-JRCN1	Jacks Reef Corner Notched	chert	29	22	*21*	5	14	19	7	na
ETSULC-JRCN2	Jacks Reef Corner Notched	chert	*18*	*9*	*21*	4	13	*18*	8	na
ETSULC-JRP1	Jacks Reef Pentagonal	chert	27	15	20	4	na	18	17	na
ETSULC-JRP2	Jacks Reef Pentagonal	chert	22	15	17	4	na	15	10	na
ETSULC-KCN1	Kirk Corner Notched	chert	27	19	24	8	18	23	10	1
ETSULC-KCN2	Kirk Corner Notched	chert	*32*	*24*	*23*	8	16	*18*	8	1

KEY	
ML	Maximum Length
BL	Blade Length
SW	Shoulder Width
MT	Maximum Thickness
NW	Neck Width
BW	Basal Width
SL	Stem Length
DC	Depth of Basal Concavity
x	Missing Feature
#	Measurement of broken features
na	Not applicable

Table2 (continued): Linear Measurements of all PPKs, in millimeters

Collections Number	Proposed Point Type	Raw Material	ML	BL	SW	MT	NW	BW	SL	DC
ETSULC-KS1	Kanawha Stemmed	chert	*30*	*24*	24	6	11	*0*	7	*0*
ETSULC-LB1	Ledbetter	chert	*40*	*30*	38	9	17	15	11	na
ETSULC-LB2	Ledbetter	rhyolite	*57*	*36*	31	12	19	18	15	na
ETSULC-LB3	Ledbetter	quartzite	57	47	33	12	17	14	9	na
ETSULC-LB4	Ledbetter	chert	62	49	30	11	14	*0*	10	na
ETSULC-LV1	Levanna	chert	25	27	na	4	na	26	na	4
ETSULC-LBC1	Little Bear Creek	rhyolite	*40*	*27*	27	6	13	9	12	na
ETSULC-MMT1	Morrow Mountain II	quartz	60	47	32	15	20	12	15	na
ETSULC-NM1	New Market	chert	36	26	16	7	10	11	7	na
ETSULC-NM2	New Market	chert	26	17	17	6	8	9	7	na
ETSULC-NM3	New Market	chert	*26*	*17*	17	7	11	10	9	na
ETSULC-NM4	New Market	chert	28	18	14	7	10	10	6	na
ETSULC-NL1	Nolichucky	chert	34	24	na	7	na	20	na	2
ETSULC-NL2	Nolichucky	chert	27	19	na	5	na	12	na	1
ETSULC-NL3	Nolichucky	chert	*29*	*20*	na	8	na	18	na	1
ETSULC-OS1	Otarre Stemmed	chert	53	40	33	11	21	19	7	na
ETSULC-OS2	Otarre Stemmed	chert	55	45	29	10	17	14	7	na
ETSULC-SBB1	Saratoga Broad Bladed	chert	52	38	33	11	19	19	10	na
ETSULC-SBB2	Saratoga Broad Bladed	chert	50	42	28	9	19	17	10	na
ETSULC-SPS1	Saratoga Parallel Stemmed	chert	46	36	25	13	19	18	*10*	na
ETSULC-SB1	Snapps Bridge (aka Coosa)	chert	42	33	26	9	16	12	14	na
ETSULC-SB2	Snapps Bridge (aka Coosa) Worn Edges	chert	41	32	18	10	13	13	12	na
ETSULC-SB3	Snapps Bridge (aka Coosa) Crude form	chert	46	38	30	9	13	13	10	na
ETSULC-STS1	Stanly Stemmed	quartzite	51	40	29	12	18	15	10	1
ETSULC-SWL1	Swan Lake	chert	30	18	15	8	10	13	15	na
ETSULC-SY1	Sykes (White Springs Cluster)	quartz	*38*	*27*	29	10	21	17	8	na
ETSULC-SY2	Sykes (White Springs Cluster)	chert	*32*	*22*	28	10	20	23	8	na

STEPS USED TO IDENTIFY TYPES OF PROJECTILE POINTS

by S.D. Dean for the Anthropology Department at ETSU

Step 1: Sort into three basic groups: stemmed, stemless, notched.
Step 2: Subdivide into groups based on descriptive features:

- lanceolate
- ovoid
- triangular
- side—notched
- corner—notched
- basal—notched
- straight stem
- contracting stem
- expanding stem
- rounded stem
- pointed stem

Step 3: Subdivide groups in Step 2 into categories that are unique in one or more attributes:

- recurvate blade edges
- fluted
- Serrated blade edges
- beveled blade edges (alternate, etc.)
- beveled stem edges
- shoulder configuration
- size of corner or side notches
- placement of corner or side notches in relation to the base stem length and breadth in comparison to blade width
- absence or presence of basal grinding base configuration:
    - straight, incurvate, excurvate, bifurcated, pointed, auriculate, burin, etc.

Figure 28: ETSULC-DE1, Dallas Excurvate

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